

**Abstract of the Disclosure**

A method and system of processing a semiconductor substrate includes, in one or more embodiments, depositing a protective layer on the substrate surface comprising a conductive element disposed in a dielectric material; processing the protective layer to expose the conductive element; electrolessly depositing a metallic passivating layer onto the conductive element; and removing at least a portion of the protective layer from the substrate after electroless deposition. In another aspect, a method and system of processing a semiconductor includes depositing a metallic passivating layer onto a substrate surface comprising a conductive element, masking the passivating layer to protect the underlying conductive element of the substrate surface, removing the unmasked passivating layer, and removing the mask from the passivating layer.